Formal Education
Technologies for scaling up ODL programmes

Odl Programmes Through M-learning Technology

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ABSTRACT

M-Learning technologies are a perfect complement to Open and Distance Learning (ODL). It provides communication with learners beyond their traditional places of learning. It also supports face-to-face learning by reaching out to learners outside the traditional classroom. m-learning technologies deliver education at reduced costs by leveraging the relatively cheap mobile infrastructure. m-learning technology is an aid for the people who are suffering from a lack of interactivity. Many online classes simply provide recorded instructor lectures to which distance students listen after downloading. They have developed a cutting-edge mobile learning system that can deliver live broadcasts of real-time classroom teaching to online students with mobile devices. Their system allows students to customize their means of content-reception, based on when and where the students are tuning into the broadcast. This system also supports short text-messaging and instant polls. Through these features, students can ask questions and make suggestions in real time, and the instructor can respond immediately. Mobile devices have a strong appeal among young adults that helps to provide flexible learning opportunities regardless of the time or the location of learners. In this paper we show how it can be used to support ODL, using technologies such as context and location awareness, mobile learning management systems, and mobile RSS. We show how classroom learning can be supported with m-Learning technologies that deliver concise course notes, summaries, assignments, and tutorials directly to individual learners after each class or topic is covered. The technology supports opinions and other forms of student interaction and communicates information on timetables/schedules, deadlines, news, alerts, etc. to an entire class. This paper describes this system in detail.

1. INTRODUCTION:

M-learning means learning through the use of mobile devices and is targeted at people who are always on the move. This kind of training can be given through mobile phones, PDA's and digital audio players and even digital cameras. M-learning' is the follow up of E-learning and which originates from D-learning (distance learning). M-learning is the delivery of education to the students who are not having fixed location or who prefer to use mobile phone technology for learning. The rapid growth in the mobile and communication sector make it possible to develop new forms of education. M-learning means delivery of education by means of the mobile phone devices, PDAs and audio players. M-learners seek the lessons in the small format.

M-Learning or mobile learning is related to e-learning and distance education, learning with mobile devices. This learning is useful when the learner is not at a fixed or predetermined location. Mobile learning decreases limitation of learning location with the mobility of general portable devices. M-learning focuses on the mobility of the learner, interacting with portable

technologies, and learning that reflects a focus on how society and its institutions can accommodate and support an increasingly mobile population. In this sharing is almost instantaneous among everyone using the same content, which leads to the reception of instant feedback and tips. M-Learning also brings strong portability by replacing books and notes with small RAMs, filled with prepared learning contents. The mobile phone (through text SMS notices) can be used especially for distance education or with students whose course requires them to be highly mobile and in particular to communicate information regarding availability of assignment results, venue changes and cancellations, etc. It can also be of value to business people. The use of mobile learning in the military is becoming increasingly common due to low cost and high portability.

Using portable computing devices (such as laptops, PDAs, smart phones, and tablet PCs) with wireless networks enables mobility and mobile learning. Mobility allows teaching and learning to extend to spaces beyond the traditional classroom. Within the classroom, mobile learning gives instructors and learners increased flexibility and new opportunities for interaction. Mobile technologies support learning experiences that are collaborative, accessible, and integrated with the world beyond the classroom

Mobile phones and their network vary very significantly from provider to provider and country to country. However the basic communication method of all of them is through the electromagnetic microwaves with a cell base station. The cellular companies have large antennas, which are usually mounted over towers, buildings and poles. The cell phones have low-power transceivers that transmit voice and data to the nearest sites usually within the 5 to 8 miles (8 to 13 kilometers away).

Current Mobile Phones can support many latest services such as SMS, GPRS, MMS, email, packet switching, WAP, Bluetooth and many more. Most of the mobile phones connect to the cellular networks and which are further connected with the PSTN (Public switching telephone network). Besides mobile communications, there is a wide range of mobile products available such mobile scanners, mobile printers and mobile labelers.

The five basic parameters for production and development of m-learning are:

- ☐ Portable: If you are using a mobile phone or a PDA, then it's easier to carry it along with you everywhere including the restroom. This makes information access through this platform easy and fast.
- ☐ Social Interaction: This kind of data can be sent to your friends, colleagues and others via short messages. You can exchange data with other people and gain considerable knowledge.
- ☐ Sensitive to the Context: This has a capability of gathering data unique to the current location, environment, and time. This includes both types of data - real and simulated.
- ☐ Connectivity: Connectivity plays an extremely important role and is the backbone of the m-learning project. With the help of a strong connectivity network, one can connect to data collection devices, other mobile phones, and to a common network.
- ☐ Customized: The most unique capability is to be able to offer customized learning information

2. **LEVELS OF M-LEARNING:**

Mobile and wireless devices can play an important role in higher education. Mobile devices already present a challenge to the traditional paradigm. The Mobile learning programme is categorized into four levels:

1. Level 1 Use of mobile devices in educational administration
2. Level 2 Use of mobile learning for study help
3. Level 3 Use of mobile learning for course modules
4. Level 4Use of mobile learning for location sensitive and context sensitive education and training

Level 1 Use of Mobile Devices in Educational Administration

The first level of mobile learning recommended is the use of mobile devices in educational administration. Illustrations of this usage are given from school and college administration, usage in the combating of drop-out and use in distance education.

Administration

All students enrolled in all higher and further education institutions today have a frequent need for information from their institutions about timetable changes, assessment deadlines, feedback from tutors and other urgent administrative details. Equally, all higher and further education institutions today have a frequent need to provide information to their students about timetable changes, assessment deadlines, feedback from tutors and other urgent administrative details. Although nearly all of these students carry a sophisticated communications device which they use constantly in all walks of life, they do not always use it in their education or training programme? If a lecture, or similar activity, has to be cancelled at short notice the university or college can communicate with the student body concerned by the postal services or email. These are not always effective means of communication so many of the students will turn up for the cancelled lecture and be inconvenienced. The institution's Administration may come in for criticism. However, if a lecture, or similar activity, has to be cancelled at short notice, the university or college communicates with the student body concerned by SMS (Short Messaging System), all of the students will receive and read the message, no-one will turn up, no-one will be inconvenienced and the institution's administration will have been successful. SMS messages can be sent in this way either to the whole student body, or a faculty, or a department or a class grouping.

Distance Education

In its faculty of education in 2002, the University of Pretoria, South Africa, had hundreds of students enrolled in the equivalent of a Higher Diploma in Education by distance education. None of these students had email or could avail of e-learning but all had a mobile phone. They were all full-time teachers employed in rural schools. The university used mobile phones very successfully in their paper-based distance education programmes for university administration, achieving almost immediate communication by SMS messaging in an area where email was unavailable and post took 5 to 15 days.

Level 2 Use of Mobile Learning for Study Help

Once a school, college or university has instituted the use of mobile devices in its administration, the next stage is to use mobile learning for academic purposes. In the first instance this can be for study help, enrolment or assignment deadlines, tutorial advice or multiple choice questions.

- Academic support for learners via SMS, MMS and WAP:
  - o communication and interaction from and with educational institution
  - o communication and interaction with peer learners and study groups
  - o browsing e-learning course material
  - o downloading study guides/manuals
  - o receive tutorial letters
  - o complete multiple choice assessment with immediate feedback
  - o send template based multimedia messages to institution (templates designed and provided by institution)
  - o generic feedback on assignments and examinations
  - o motivational messages
  - o tutor services
- Administrative support via SMS, MMS, WAP and EPSS, integrated with the Internet:
  - o downloading of material (sections of learning materials, assignments, letters, etc.)
  - o access to institutions M-portal on the web
  - o access to examination and test marks via mobile service number or M-portal
  - o access to financial statements and registration data via mobile service number
- Daily tips

Level 3 Use of Mobile Learning for Course Modules

Once the institution has completed the introduction of five to six screen study helps on mobile devices, it is time to consider the provision of full course modules on mobile devices or via podcasting. The goal is that mobile learning should enter into mainstream education and training and no longer rank as a project in the institution. For acceptance into the mainstream four criteria are required: accreditation, curriculum, assessment and fee-paying.

Accreditation
The enrolment of mobile learning students into accredited courses is a goal of mobile learning course development. Thus the mobile learning module or part of a module needs to be accredited in the same way as the other academic offerings of the institution. If a course is not presented as accredited in the prospectus of the institution, it remains at the level of a research project and has the fragility of project status.

Curriculum
It is a goal of the field of mobile learning that mobile learning courseware should be presented in the curriculum of the institution with the same procedures as are applied to the presentation of face-to-face and e-learning courses. It is important that mobile learning courseware, or modules of courseware which have mobile learning components, should form part of courses that are presented in the same way as the other courses of the
institution.

Assessment
It is a goal of the field of mobile learning that mobile learning courseware should be assessed with the same rigour as is applied to the assessment of face-to-face and e-learning courses. It is important that mobile learning courseware, or modules of courseware which have mobile learning components, should form part of courses that are assessed in the same way as the other courses of the institution. If this does not occur, mobile learning will not be incorporated into the mainstream of education and training provision.

Level 4 Use of Mobile Learning for Context Sensitive Location Based Education and Training

Once an institution has successfully developed mobile learning course modules it is time to consider the development of courseware with location based and context sensitive attributes. Here one enters an area in which mobile learning is supreme and for which mobile telephony is particularly suited. The provision of location based and context sensitive courseware is a characteristic that mobile learning does better than face-to-face education or distance education or e-learning.

The profile of the typical mobile device is changing rapidly. It is estimated by 2010 that the number of people using mobile broadband connections will have increased to over half a billion. This access is being made on all types of mobile devices: mobile phones, media players, handheld games consoles, ultra portable PCs, etc. Already one is seeing a great deal of convergence in the marketplace; while it is common to see people carrying both a mobile phone and a media player, such as an iPod, these devices are merging, with mobile phones offering gigabytes of storage for audio and video. Devices running Windows Mobile and Symbian have many of the features of laptops or desktop computers and are now being used to access the net at broadband speeds. As a result it is now possible to envisage an audience for mobile learning content which is media rich, collaborative and always available to the user. Using established technologies such as GPS and SCORM, and developing for newer technologies such as RFID (Radio Frequency Identification) and Mobile Positioning, training content can be developed for both context sensitive and location based delivery..

3. TECHNOLOGIES, ESEARCHED FOR MOBILE LEARNING INCLUDE:

- ☐ Location aware learning
- ☐ Point-and-shoot learning with camera phones and 2D codes

- ☐ Near Field Communications (NFC) secure transactions
- ☐ Sensors and accelerometers in mobile devices in behavioral based learning
- ☐ Mobile content creation (including user generated content)
- ☐ Games and simulation for learning on mobile devices
- ☐ Context-aware ubiquitous learning
- ☐ Augmented reality on mobile devices

M-Learning includes the use of mobile/handheld devices to perform any of the following:

- ☐ Deliver Education/Learning
- ☐ Foster Communications/Collaboration
- ☐ Conduct Assessments/Evaluations
- ☐ Provide Access to Performance Support/Knowledge
- ☐ Capture Evidence of Learning Activity

Mobile devices and personal technologies that can support mobile learning, include:

- ☐ E-book
- ☐ Handheld audio and multimedia guides, in museums and galleries
- ☐ Handheld game console, modern gaming consoles such as Sony PSP or Nintendo DS
- ☐ Personal audio player, e.g. for listening to audio recordings of lectures (podcasting)
- ☐ Personal Digital Assistant, in the classroom and outdoors
- ☐ Tablet PC
- ☐ UMPC, mobile phone, camera phone and SmartPhone

Technical and delivery support for mobile learning:

- ☐ **3GP** For compression and delivery method of audiovisual content associated with Mobile Learning
- ☐ **GPRS** mobile data service, provides high speed connection and data transfer rate
- ☐ **Wi-Fi** gives access to instructors and resources via internet

4. ACHIEVEMENTS OF MOBILE LEARNING TODAY- INTERNATIONAL

The project 'The role of mobile learning in European education' has completed two major studies of mobile learning. The first study is an international analysis of the achievements of mobile learning worldwide. It is 180 pages in length and deals with Australia, Canada, India, Japan, Republic of Korea, South Africa, Taiwan and the United States of America.

Much of the data is unique, little known and not available elsewhere. Extensive bibliographies are included of mobile learning in Japan, Korea, Taiwan and China which will be of value to other researchers in the field. The study shows that Japan, Taiwan and South Africa are world leaders in the field of mobile learning and that both Korea and China have great potential to also become major players. Considerable activity has also been documented in Australia, Canada, India and the United States of America.Despite acknowledging their potential for supporting collaboration, teachers mostly view PDAs as personal devices and used only the software that supported their personal information needs. Not all participants were suffi ciently interested to trial the devices and the perceived lack of reliability where this generation of PDAs can lose their data if the battery is allowed to dischargewas a signifi cant barrier to their engagement.

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5. KEY OBSERVATIONS

- Mobile learning helps learners to

improve their literacyand numeracy skills and to recognise their existing abilities

- Mobile learning can be used to ncourage both independentand collaborative learning experiences
- Mobile learning helps learners to identify areas where they needassistance and support
- Mobile learning helps to remove some of the formality from the learning experience and engages reluctant learners
- Mobile learning helps learners to remain more focused for longer periods
- Mobile learning helps to raise self-confidence

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